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REMARKS

Claims 1-34 are pending in this application. Claims 1, 10 and 20 are hereby amended. Claims 1-34 are rejected as follows: Claims 1-3, 6-14, 17-28 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,864,641 to Murphy et al ("Murphy") in view of U.S. Patent Number 4,844,613 to Batchelder et al ("Batchelder"), U.S. Patent Number 5,377,008 to Ridgway et al ("Ridgway"), and U.S. Patent Number 6,493,090 to Lading et al ("Lading") (collectively, Murphy, Batchelder, Ridgway, and Lading are "the cited references"); Claims 4-5, 15-16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy in view of Batchelder, Ridgway, and Lading as applied to the claims above, and further in view of the "acknowledged prior art on page 23, paragraph [0083]." In view of the amendments and remarks presented herein, the undersigned respectfully traverses these rejections as set forth below.

Rejection of Claims 1-3, 6-14, 17-28 and 30-34 Under 35 U.S.C. §103(a)

Claims 1-3, 6-14, 17-28 and 30-34 are rejected under 35 U.S.C. §103(a) as being unpatentable over Murphy in view of Batchelder, Ridgway, and Lading ("the cited references").

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) MPEP §2142.

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The Office Action fails to establish a *prima facie* case of obviousness. The Office Action does not show how the combination of the cited references teach each and every element of the claims as presented.

Each of independent claims 1, 10 and 20 has been amended to specifically recite that the detector molecules are for binding the target agent thereto. Support for this amendment is found in paragraph [0062] of the specification. In addition to the other limitations of these claims that are not disclosed in Murphy, Murphy does not disclose the use of molecules for binding to target agents. In fact, Murphy teaches away from this limitation. Referring to the Background of the Invention and in particular, Column 3, lines 29-55, Murphy specifically discusses the deficiencies of systems which rely on binding:

However, this system was found to be deficient and the test results are questionable. Unfortunately, Tran et al. failed to run a control so there is no way to determine what caused the change in wavelength. In turn, the changes in output may have resulted from non-bonding interactions. When the antibodies are adhered directly to an optical fiber, the antibody density is limited by the antibody size. The density affects the number of target molecules that can be captured and also the refractive index of the coating. To obtain measurable sensitivity from the antibodies, the population of attached antibodies must be as large as possible. This is counter-productive because the large population results in the refractive index of the coating becoming too large to be useful. Antibodies have two sites for binding to target molecules. When antibodies are applied to an optical fiber, they are packed too close together causing the binding sites of adjacent antibodies to be positioned close together. This results in the overlap of binding sites, which precludes potential binding with the target molecules. The close packing of the binding sites prevents capture by either site. In addition, many of the binding sites are oriented toward the fiber instead of toward the sample, reducing the overall number of binding sites. Lastly, the target molecule (protein) that the antibodies on the fiber are trying to capture is typically greater than the antibody spacing. In turn, antibodies end-up competing for capture and no binding occurs with the coating.

Further, Murphy describes the use of a reactive coating as part of the optical sensor described therein. A reactive coating is specifically defined in the specification as being physically,

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electrically or chemically reactive, none of which include the binding process of the claims. (See Col. 4, lines 17-40). And it makes sense that this process would be excluded by Murphy in view of the discussion in the Background of the Invention as to the deficiencies of the binding process. Accordingly, Murphy actually teaches away from the claimed combinations and even if the Office were to find a reference that teaches the binding process, it would not be appropriate to combine Murphy with this reference in an obviousness rejection. (It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) MPEP 2145(D)(2)).

Further, with respect to dependent claims 6, 7 and 13, the Office has not shown, nor does the undersigned representative find, a teaching or suggestion of at least these limitations in the cited references. In the absence of a teaching or suggestion of this limitation in the cited references, the undersigned representative believes the rejection of claims 6, 7 and 13 is improper.

Since the cited references in this Office Action fail to teach each and every element claimed in this application, the Office has failed to make a case for obviousness under 35 U.S.C. §103(a). Therefore, the undersigned representative believes claims 1, 10, and 20 and all claims depending therefrom to be allowable over the cited art. Accordingly, the undersigned representative requests the rejection of claims 1-3, 6-14, 17-28 and 30-34 be reconsidered and withdrawn.

Rejection of Claims 4-5, 15-16 and 29 Under 35 U.S.C. §103(a)

Claim: 4-5, 15-16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy in view of Batchelder, Ridgway, and Lading as applied to the claims above, and further

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in view of the "acknowledged prior art on page 23, paragraph [0083]." Since claims 4-5, 15-16 and 29 are dependent on independent claims 1, 10, and 20 and the Office has failed to meet the burden to support a showing of obviousness with regard to independent claims 1, 10, and 20, the Office similarly fails to meet the burden of with respect to claim 4-5, 15-16 and 29. Therefore, it is respectfully requested that the rejection of claims 4-5, 15-16 and 29 under 35 U.S.C. §103(a) be reconsidered and withdrawn.

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CONCLUSION

The undersigned believes that claims in this application are allowable over the cited prior art and respectfully requests a notice of allowance to this effect. Should the Examiner determine that any further action is necessary to place this application into better form, the Examiner is encouraged to telephone the undersigned representative at the number listed below. In addition, if any additional fees are required in connection with the filing of this response, the Commissioner is hereby authorized to charge the same to Deposit Account No. 501458.

Respectfully submitted,

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